

**BUTZEL LONG**  
ATTORNEYS AND COUNSELORSSuite 300  
350 South Main Street  
Ann Arbor, MI 48104  
(734) 995-3110

Fax: (734) 995-1777

## Fax Cover Sheet

Please deliver the following pages to:

Name: Ms. Lesley GordonFirm: Board of Patent Appeals

City &amp; State: \_\_\_\_\_

Fax Number: 571-273-0299File Reference: USSN 09/766,275

From:

Name: Michael S. GzybowskiDate: June 21, 2006 Time: 8:48 AM Please Confirm TransmissionContact Phone No 734-213-3629

Message: Ms. Gordon. Attached is the RELATED PROCEEDINGS APPENDIX you asked me to submit. Please let me know if there is anything else you need. Thank-you for your assistance in the case.

Michael

This material is intended only for the individual or entity to which it is addressed. It may contain privileged, confidential information which is exempt from disclosure under applicable laws. If you are not the intended recipient, please note that you are strictly prohibited from disseminating or distributing this material (other than to the intended recipient) or copying this material. If you have received this communication in error, please notify us immediately by telephone and return this material (and all copies) to us by mail at the above address. On request, we will reimburse you for any cost of return. Thank you.

Number of Pages (including this cover page) 19

If you do not receive all of the pages, please call back as soon as possible

Contact Number: (734) 995-3110

Appl. No. 09/766,275

**PATENT APPLICATION**

*IN THE UNITED STATES PATENT AND TRADEMARK OFFICE*

*Group*  
*Art Unit:* 1771

*Attorney*  
*Docket No.:* 121027-040

*Applicant:* Toshio KOBAYASHI et al.

*Invention:* ELASTICALLY STRETCHABLE  
COMPOSITE SHEET AND PROCESS FOR  
MAKING THE SAME

*Serial No.:* 09/766,275

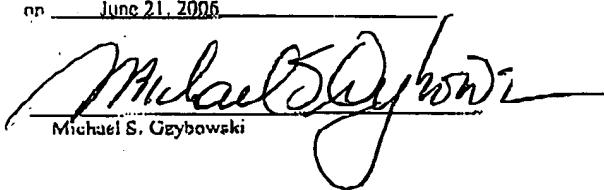
*Filed:* January 19, 2001

*Examiner:* Jennifer Boyd

Certificate Under 37 CFR 1.8(a)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231

on June 21, 2006

  
Michael S. Geybowski

**ADDENDUM TO BRIEF ON APPEAL**

Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Further to Appellants' Notice of Appeal filed February 22, 2005 in connection with the above-identified application, Appellants submit the following addendum:

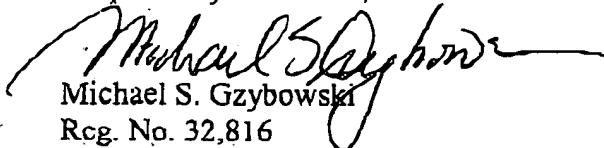
Attached: Related proceedings appendix

Note the attached Exhibits were originally submitted as an EVIDENCE APPENDIX with

Appl. No. 09/766,275

Appellants' original Brief on appeal.

Respectfully submitted,

  
Michael S. Gzybowski  
Reg. No. 32,816

BUTZEL LONG  
350 South Main Street  
Suite 300  
Ann Arbor, Michigan 48104  
(734) 995-3110

152345.1

Appl. No. 09/766,275

## RELATED PROCEEDINGS APPENDIX

*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). (Attached as Exhibit "A")

*Ex parte Roland Barth* (Appeal No. 1998-0982; Application No. 08/399,715) (Attached as Exhibit "B")

321 (1974). While the \$10,000 awarded plaintiffs in fees might be considered generous when compared with the amount recovered in damages, the fees do not appear unreasonable considering the amount of work necessitated and performed and the skill employed. See also Key West Hand Print Fabrics, 269 F.Supp. at 615-16, 155 USPQ at 132-133. There was no abuse here.

However, we deny plaintiffs' application for allowance of additional attorneys' fees on appeal. We assume counsel was familiar with the law, having made similar arguments in district court on all the issues raised on appeal. See Monogram Models, 492 F.2d at 1288, 181 USPQ at 429. The appeal was not frivolous. Plaintiffs did not prevail on their cross appeal. Equity considerations lead us to permit the parties to pay their own attorneys' fees in this court. The plaintiffs are entitled to costs.

Affirmed.

#### Court of Customs and Patent Appeals

*In re Boesch and Slaney*

No. 79-597

Decided Mar. 13, 1980

#### PATENTS

##### 1. Patentability — Invention — In general (§51.501)

##### Patentability — Invention — Specific cases — In general (§51.5091)

Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.

##### 2. Patentability — Composition of matter (§51.30)

##### Patentability — Evidence of — In general (§51.451)

##### Patentability — Evidence of — Comparison with allowed claims or patents (§51.457)

##### Patentability — Invention — In general (§51.501)

##### Patentability — Invention — Specific cases — In general (§51.5091)

Prima facie case of obviousness may be rebutted where results of optimizing variable, which was known to be result effective, are unexpectedly good; proof of unexpected properties may be in form of direct or indirect comparative testing of claimed compounds and closest prior art.

##### 3. Patentability — Composition of matter (§51.30)

##### Patentability — Evidence of — In general (§51.451)

##### Patentability — Evidence of — Comparison with allowed claims or patents (§51.457)

##### Patentability — Invention — Specific cases — Chemical (§51.5093)

Data that compares four examples of claimed alloys with one example of prior art alloy and is intended to show unexpected results are not commensurate in scope with claims for broad range of elements in case in which weight percent of elements in four examples of claimed alloys vary by relatively minor amounts, for example, entire claimed range of carbon is .18 percent, but tested range is only .02; and claimed cobalt range is 4.8, but test range is only 1.3, and there is no evidence showing whether other alloys encompassed by these broad claims and having elements varying by relatively major amounts also exhibit unexpected results.

##### 4. Patentability — Composition of matter (§51.30)

##### Patentability — Evidence of — In general (§51.451)

##### Patentability — Evidence of — Comparison with allowed claims or patents (§51.457)

##### Patentability — Invention — Specific cases — Chemical (§51.5093)

Test results involving single alloy within broad range claimed are not sufficient to support appellants' allegation of what would, from prior art, be unexpected under circumstances in which essential concept of invention is to maintain average number of electron vacancies at value not exceeding about 2.35, prior art teaches that reduction of Nv value reduces the chances of sigma phase in alloy, appellants allege that alloys meeting their composition and Nv value requirements are free from sigma phase, and appellants tested only one example of low Nv value alloy and found no sigma, which is result consistent with both prior art

EXHIBIT



teaching and appellants' allegation that their claimed alloys are totally free from sigma phase; where it is alleged that certain technique for flipping coins would always produce "heads," one would hardly be persuaded by single toss of coin that resulted in showing of "heads."

**Particular patents — Nickel Alloys**

**Boesch and Slaney, Temperature Nickel Based Alloy and Process of Making Same, rejection of claims 1 and 8-15 affirmed.**

**Appeal from Patent and Trademark Office Board of Appeals.**

Application for patent of William J. Boesch and John S. Slaney, Serial No. 587,776, filed June 17, 1975. From decision rejecting claims 1 and 8-15, applicants appeal. Affirmed.

Robert F. Dropkin and Vincent G. Gioia, both of Pittsburgh, Pa., for appellants.

Joseph F. Nakamura (John W. Dewhurst, of counsel) for Commissioner of Patents and Trademarks.

Before Markey, Chief Judge, Rich, Baldwin, and Miller, Associate Judges, and Malitz,\* Judge.

Miller, Judge.

This is an appeal from a decision of the Patent and Trademark Office ("PTO") Board of Appeals ("board") which sustained the examiner's rejection under 35 USC 103 of appellants' claims 1 and 8-15 in view of Lamb and Pohlman et al. We affirm.

*Invention*

The invention embraces nickel base alloys consisting essentially of:

<u>Metals</u>	<u>Percentage Ranges</u>
aluminum	4.0 - 4.7
boron	0.005 - 0.03
carbon	0.0 - 0.18
chromium	13.7 - 15.3
cobalt	14.2 - 19.0
iron	0.0 - 4.0
molybdenum	3.8 - 4.8
titanium	3.0 - 3.7

\* The Honorable Herbert N. Malitz of the United States Customs Court, sitting by designation.

<sup>1</sup> Serial No. 587,776, was filed on June 17, 1975.

<sup>2</sup> U.S. patent No. 3,147,155, issued September 1, 1964.

<sup>3</sup> U.S. patent No. 3,457,066, issued July 22, 1969.

The remainder of the alloys comprises nickel and incidental impurities. The elements in the alloys are balanced to provide an  $N_v$  value not in excess of about 2.35 according to the following equation:

$$N_v = 4.66 (A\% Cr + A\% Mo) + 1.71 (A\% Co) + 0.61 (A\% Ni)$$

In the case of alloys within the board range set forth above, but not balanced to meet the required  $N_v$  value, room temperature ductility deteriorates, and creep deformation increases, after prolonged exposure at elevated temperatures. Appellants state that these results are attributable to formation of a deleterious phase (known as "sigma phase") in the metal after such exposure, and that the tendency of an alloy to form sigma phase is (unexpectedly) eliminated by balancing the relative amounts of its constituent elements in accordance with the  $N_v$  equation. Where the composition of an alloy has been controlled to provide an  $N_v$  value of about 2.35 or less, no sigma has been found after exposure at 1500°F for time periods up to 7200 hours.

Claim 1 is illustrative:

1. A nickel base alloy having a composition consisting essentially of up to 0.18% carbon from about 14.2% to about 19.0% cobalt, from about 13.7% to about 15.3% chromium, from about 3.8% to about 4.8% molybdenum, from about 3.0% to about 3.7% titanium, from about 4.0% to about 4.7% aluminum, up to about 4.0% iron, from 0.005% to about 0.03% boron and the balance essentially nickel with incidental impurities, the aforementioned elements being balanced to provide an  $N_v$  value not in excess of about 2.35 according to the following equation:

$$N_v = 4.66 (A\% Cr + A\% Mo) + 1.71 (A\% Co) + 0.61 (A\% Ni)$$

\*  $N_v$  refers to the average electron vacancy concentration per atom in the matrix of the alloy.

Appellants state that the overall variation in  $N_v$  due to chemical uncertainty is  $\pm 0.25$  so that in reality the  $N_v$  value of about 2.35 may actually extend from 2.32 to 2.38.

Appellants' specification states that "A%" refers to the atomic percent of the element so described."

Creep is the permanent deformation of a metal that occurs as a result of prolonged compression or extension at or near room temperature. The Condensed Chemical Dictionary 228 (8th ed. 1971).

the alloy being characterized by its freedom from precipitation of deleterious amounts of sigma-like phase after exposure at temperatures in excess of 1500°F for periods of time in excess of 1000 hours.

#### Prior Art

Lamb discloses a process for hot working age-hardenable nickel-chromium alloys. The alloys contain:

<u>Metals</u>	<u>Percent by Weight</u>	
aluminum	4.0	- 5.4
boron	0.003	- 0.1
chromium	14.0	- 16.0
carbon	0.01	- 0.2
cobalt	14.0	- 25.0
molybdenum	3.0	- 5.5
titanium	3.0	- 4.6
zirconium	0.01	- 0.2

A sample alloy is heated at 1190°C for 1.5 hours and cooled to 1000°C at about 1°C per minute, after which it may be hot worked at 1120°C. When hot working is complete, the alloy will generally require a further heat treatment to develop full creep resisting properties.

Pohlman et al. disclose nickel base alloys suitable for elevated temperature operation containing:

<u>Metals</u>	<u>Percent by Weight</u>	
aluminum	4.2	- 4.6
boron	0.025	- 0.035
carbon	0.04	- 0.07
chromium	14.5	- 15.5
cobalt	14.5	- 15.5
molybdenum	4.5	- 5.5
titanium	3.3	- 3.7

The remainder of the alloys essentially comprises nickel and incidental impurities; possibly, also, small amounts of silicon and manganese.

Both references are silent regarding an  $N_V$  value requirement, although Lamb requires "a total aluminum and titanium content from about 7.75% to about 9.5%" and Pohlman et al. "prefer about 14.5-15.5 percent by weight cobalt because that range results in the best balance at elevated temperatures between such properties as tensile and rupture strengths, oxidation resistance and the ability of the sheet material to be formed or worked."

#### The Buesch Affidavit

Seven heats of alloys (appellants' Table I below), which were within the claimed composition ranges but whose  $N_V$  values varied from 2.40 to 2.54 (all clearly above the upper limit of 2.35 set forth in the claims), were processed and heat treated. Appellants' Table II shows that all seven heats contained sigma phase.

TABLE I  
CHEMISTRY-WEIGHT PERCENT

Heat No.	C	Cr	Ni	Co	Fe	Mo	Ti	Al	B	$N_V$
D1-379-1	0.01	15.3	Bal.	17.9	--	4.5	3.6	4.7	0.023	2.53
D1-379-2	0.04	15.3	Bal.	17.9	--	4.6	3.6	4.7	0.022	2.54
D1-380-1	0.06	15.3	Bal.	17.5	1.0	4.6	3.6	4.7	0.021	2.51
D1-380-2	0.06	15.1	Bal.	17.4	3.5	4.5	3.5	4.6	0.020	2.40
D1-382	0.06	15.3	Bal.	18.5	--	4.3	3.5	4.4	0.019	2.47
D1-383	0.06	15.2	Bal.	17.7	--	4.3	3.6	4.4	0.020	2.43
D1-386	0.06	15.3	Bal.	18.1	--	4.7	3.4	4.6	0.021	2.49

TABLE II

<u>Heat No.</u>	<u>Approximate w/o Sigma</u>
D1-379-1	1.4
D1-379-2	0.9
D1-380-1	0.4
D1-380-2	0.05
D1-382	0.05
D1-383	0.3
D1-386	0.3

The affidavit states that "any amount of sigma phase is deleterious and undesirable because of the susceptibility to embrittlement failure following exposure to high temperature."

#### *The Board*

The board agreed with the examiner that the claimed alloys were *prima facie* obvious from the prior art, noting that there was no substantial disagreement that both Pohlman et al. and Lamb disclose alloys having compositional limits overlapping those of the claimed alloys. Although disagreeing with the examiner's contention that there was no evidence to support the statement in the Boesch affidavit that "any amount of sigma phase is deleterious and undesirable," it agreed with the examiner that the Boesch affidavit was insufficient to overcome the *prima facie* case of obviousness because there was no evidence showing:

- (1) the precise amounts of sigma-like phase present in compositions containing Appellants' claimed components balanced to provide  $N_V$  values just inside versus just outside Appellants' claimed "about 2.35"  $N_V$  limits; and (2) direct comparisons of sufficient mechanical properties of those compositions within and without the claimed limit, to demonstrate the alleged critical correlation of  $N_V$  limit with sigma phase content.

"The board agreed with the examiner that "there [was] no evidence showing" that an alloy

The board also said that the showing (in the specification, set forth *infra*) did not establish the asserted criticality in selection of the components of the alloys according to the claimed  $N_V$  formula, because the alloys failed to meet the claimed compositional and  $N_V$  value requirements.

#### *Opinion*

##### *The Prima Facie Case*

Each of the ranges of constituents in appellants' claimed alloys overlaps ranges disclosed by Pohlman et al. and Lamb. Appellants, citing *In re Waymouth*, 499 F.2d 1273, 182 USPQ 290 (CCPA 1974), argue that neither of the cited prior art references recognizes the problem solved by them and, therefore, cannot render the claims obvious. Upon examination of the prior art references, we do not agree. Appellants admitted in their specification that:

It has been postulated according to Pauling's theory that the criterion for the formation of sigma phase is based upon the number of electron vacancies ( $N_V$ ) in the bonding orbitals of the elements involved. Based thereon, other investigators have derived an empirical equation which includes the elements chromium, molybdenum, manganese, iron, cobalt and nickel. It is to be noted, however, that the nickel base alloys to which reference is made in the present invention relate to an iron-free or low-iron composition, with only incidental amounts of an element such as manganese, and are hardened by the aluminum and titanium rich intermetallic compound gamma prime.

U.S. patent No. 3,837,838 ('838), filed December 18, 1972, and issued September 24, 1974, was introduced into evidence by appellants and further illuminates what is meant by "Pauling's theory":

As described in an article by Linus Pauling entitled "The nature of interatomic forces in metals," published in *Physical Review*, 54:899, 1938, in a given metallic atom, the outer most orbitals, termed the bonding orbitals, are occupied by the bonding electrons responsible for bonding the atom to its neighboring metallic atoms. At a given instant in time and on the average, the bonding orbitals

having an  $N_V$  number of 2.35 is free of any amount of sigma phase, or what the sigma phase content and properties are of an alloy having an  $N_V$  number of 2.36 which is close to but outside the  $N_V$  requirement."

are only partially occupied by the bonding electrons. Such partial occupation means that the outer orbitals are partially vacant of electrons or possess an "electron hole." The total average number of vacant orbitals in a given metallic atom is called the electron hole number of the metal ( $N_v$ ). The average electron hole number ( $N_v$ ) is the resultant of adding all  $N_v$  for the participating elements in the alloy matrix. The higher the  $N_v$  of a given Co-Cr-Ni alloy the higher the chance for the precipitation of embrittling phases. The quantities of metals consumed in precipitation do not enter in calculating  $N_v$  of the alloy matrix and hence do not participate in the formation of embrittling phases. A low  $N_v$  may thus be obtained by either choosing elements of low  $N_v$  to form an alloy or by using elements that will react in the alloy and precipitate out from the alloy matrix.

Accordingly, in carrying out this invention, I have selected an alloy-base for the system which possesses a low  $N_v$  and have strengthened the alloy base by adding elements which will have minor or no effect on raising the  $N_v$  through controlling their percentage as solutes or by eliminating their effect on  $N_v$  by formation of compounds which precipitate out.

It appears from appellants' specification that certain precipitate-hardened nickel base alloys, after being exposed to elevated temperatures for prolonged periods of time, suffered "from a marked and catastrophic decrease in room temperature ductility and a marked increase in the rate of creep deformation." It was observed that other nickel base alloys having the same percentage ranges of components did not suffer such deleterious changes. The cause of the problem was believed to be the formation of an embrittling phase ("sigma"). As early as 1938, however, it was known that the higher the  $N_v$  value of a Co-Cr-Ni alloy, the higher the chance for precipitation of embrittling phases; also, that the quantities of metals consumed in precipitation did not enter into

calculating the  $N_v$  value of an alloy matrix. We are persuaded that one of ordinary skill in the art would have been guided by these principles.

[1] In the above-quoted passage from '838, we note that lowering the  $N_v$  value of a Co-Cr-Ni alloy and deletion of the metals not consumed in precipitation from the  $N_v$  calculation are expressly suggested. Considering, also, that the composition requirements of the claims and the cited references overlap, we agree with the Solicitor that the prior art would have suggested "the kind of experimentation necessary to achieve the claimed composition, including the proportional balancing described by appellants'  $N_v$  equation." This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); *In re Aller*, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955). Accordingly, we conclude that a prima facie case of obviousness has been established.

#### *Unexpected Results*

[2] It is well settled that a prima facie case of obviousness may be rebutted "where the results of optimizing a variable, which was known to be result effective, [are] unexpectedly good." *In re Antonie*, *supra*, 559 F.2d at 620, 195 USPQ at 8-9, and cases cited therein. It is also well settled that proof of unexpected properties may be in the form of direct or indirect comparative testing of the claimed compounds (here, alloys) and the closest prior art. *In re Payne*, 606 F.2d 303, 316, 203 USPQ 245, 256, (CCPA 1979), and cases cited therein.

#### *A. Creep Tests*

Table V, set forth in appellants' specification and shown below, compares four examples of the claimed alloys with one example (6-3211) of a prior art alloy and is intended to show that the measured creep of the claimed alloys is unexpectedly less than that of the prior art.

TABLE V

Creep Tests at 1500°F and 37,000 psi

Alloy No.	Sample Removed After (Hours)	Measured Creep (inches per inch)
2-1422	1567.8	0.008
2-1423	1500.4	0.004
2-1425	1504.5	0.010
2-1426	1500.4	0.004
6-3211	1505.1	0.034

220

*In re Buesch and Slaney*

205 USPQ

The measured creep of 6-3211 — an alloy, appellants note, having "chemistries" within those of the references — is in excess of three to eight times greater than the creep of the claimed alloys.

The composition and  $N_v$  values of the alloy heats in Table V are as follows:

Alloy No.	Element, Weight %							$N_v$ Value	
	C	Ni	Ti	Mo	Cr	Co	N		
2-1422	0.07	4.20	3.25	4.70	16.7	18.0	0.020	bal.	2.32
2-1422	0.06	4.27	3.45	4.03	16.6	18.0	0.020	bal.	2.36
2-1422	0.06	3.01	2.98	4.00	16.6	17.9	0.020	bal.	2.31
6-3211	0.05	4.20	3.19	4.50	16.5	17.8	0.020	bal.	2.37
6-3211	0.05	4.24	3.34	4.55	15.3	18.0	0.030	bal.	2.31

Although it is apparent that the molybdenum content of 6-3211 exceeds the maximum content of the claimed alloys by 0.15%, it is clearly within the ranges of the Pohlman et al. and Lamb alloys.

[3] However, we are not persuaded that the Table V data are commensurate in

scope with appellants' claims. *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230, (CCPA 1978).<sup>1</sup> Appellants claim broad ranges of elements, but the weight percent of elements in the four examples of the claimed alloys vary by relatively minor amounts. For example, the entire claimed range of carbon is .18 percent, but the tested range is only .02 (.07 minus .05); the claimed cobalt range is 4.8, but the test range is only 1.3. There is no evidence showing whether other alloys encompassed by appellants' broad claims and having elements varying by relatively major amounts also exhibit a low creep rate.

*B. Ductility Test*

Appellants' Table VI, set forth in their specification, compares the room temperature ductility of one heat of the claimed alloy (2-1426) and one heat of an alloy (6-3266) which appellants state has "chemistries" within those of the references.

**TABLE VI**  
**Room Temperature Tensile Tests**

Alloy No.	Condition	U.T.S. psi	0.2% Offset Y.S. (psi)		Elong. (%)	R.A. (%)	$N_v$ Value
			204,000	140,000			
2-1426	As-heat-treated	204,000			16.9	15.0	2.27
2-1426	As-heat-treated + exposed 5000 hrs. at 1500°F	157,000	100,000	16.1	14.1	2.27	
6-3266	As-heat-treated	194,500	136,800	14.0	13.7	2.52	
6-3266	As-heat-treated + exposed 5000 hrs. at 1500°F	150,500	117,500	5.0	5.5	2.52	

The marked decrease in room temperature ductility (Elong.) after prolonged elevated temperature exposure of the prior art alloy (6-3266), compared to the claimed alloy's (2-1426) essentially unchanged ductility, is contended to show an unexpected result, as was the improvement in measured creep discussed earlier. However, for the same reason that the measured creep test data of Table V are not persuasive of unexpected results, we do not regard the tensile test data of Table VI, comparing only one heat of a claimed alloy, sufficient to rebut the prima facie case of obviousness of the claimed invention.

*C. Absence of Sigma Phase*

Throughout prosecution appellants have maintained that the claims define "a nickel

base alloy which can be manufactured in a consistent way to remain free from a tendency to form plate-like sigma phase." The "essential concept of the present invention [is] to maintain the average number of electron vacancies at a value not exceeding about 2.35." Whereas the Pauling theory teaches that a low  $N_v$  value means reduced chances for sigma phase, appellants allege that alloys meeting their composition and  $N_v$  value requirements are free from sigma phase.

[4] As related earlier, the Boesch affidavit shows that sigma phase is present in

<sup>1</sup> It is unnecessary to decide whether 6-3211 is the "best prior art." See *In re Malagari*, 499 F.2d 1297, 1302-03, 182 USPQ 549, 552-53 (CCPA 1974).

seven alloy examples, all of which meet the composition requirements but exceed the N<sub>v</sub> value requirement of the claimed alloys. However, this affidavit contains no examples of claimed alloys showing the absence, or presence, of sigma. The remainder of the record reveals only a single example of the claimed alloy, which shows the absence of sigma.<sup>16</sup> Appellants' specification includes a photomicrograph of Table V alloy heat 2-1422, which clearly shows the absence of sigma; also, a photomicrograph of Table V alloy heat 6-3211, which shows the presence of sigma. We note again that the prior art teaches that reduction of the N<sub>v</sub> value reduces the chances of sigma phase in the alloy. Here appellants tested only one example of a low N<sub>v</sub> value alloy and found no sigma — a result consistent with both the prior art teaching and appellants' allegation that their claimed alloys are "totally free from sigma phase."<sup>17</sup> Under such circumstances, test results involving a single alloy within the broad range claimed are not sufficient to support appellants' allegation of what would, from the prior art, be unexpected.<sup>18</sup>

In view of the foregoing we hold that appellants have failed to rebut the prima facie case of obviousness.

The decision of the board is affirmed.  
Affirmed.

<sup>16</sup> Thus, appellants have again failed to show test data commensurate in scope with the broad claims.

<sup>17</sup> We agree with the board that the six United States patents ((1) No. 4,093,474, issued June 6, 1978; (2) No. 4,083,734, issued April 11, 1978; (3) No. 3,930,904, issued January 6, 1976; (4) No. 3,837,898, issued September 24, 1974; (5) No. 3,816,110, issued June 11, 1974; and (6) No. 3,767,385, issued October 23, 1973) introduced into the record by appellants "do support the assertion in the Bocach affidavit that 'any amount of sigma phase' is undesirable." Therefore, we have limited our analysis to the issue of the existence of sigma phase and have not extended it to include the effect of varying amounts of sigma phase.

<sup>18</sup> Where it is alleged that a certain technique for flipping coins would always produce "heads," one would hardly be persuaded by a single toss of a coin which resulted in a showing of "heads."

#### Court of Customs and Patent Appeals

##### *In re Breslow*

No. 79-602

Decided Feb. 28, 1980

#### PATENTS

##### 1. Patent grant — In general (§50.01)

##### Patent grant — Nature of patent rights — In general (§50.201)

Government grants only right to exclude; there is no other agreement; analogy of a patent to a contract on theory that it is issued in exchange for invention's disclosure, "consideration," is inexact; patent is statutory right; it is granted to "Whoever" fulfills conditions, Section 101, unless fraud has been committed.

##### 2. Court of Customs and Patent Appeals — Issues determined — Ex parte patent cases (§28.202)

Question of whether claimed compounds "are even formed" on which point Board of Appeals disagreed with examiner who argued that there was no indication nor proof on this point and board expressly held to contrary is not before Court of Customs and Patent Appeals.

##### 3. Patentability — Subject matter for patent monopoly — In general (§51.601)

Ex parte Howard, 328 O.C. 251, 1924 C.D. 75, dealt with construction of "manufacture" rather than "composition of matter," with gob, of at least obvious, molten glass in transitory state rather than with novel chemical compounds, and with mechanical molding process in which it was well known to use molten gob of glass as distinguished from novel chemical process using entirely new and unobvious group of chemical compounds.

##### 4. Patentability — New use or function — Composition of matter (§51.555)

##### Patentability — Subject matter for patent monopoly — In general (§51.601)

*In re Stubbs*, 13 USPQ 358, did not deal with issue of whether claimed compounds are excluded from category of "composition of matter" in Section 103 merely because they are transitory, unstable, and non-isolatable.

##### 5. Patentability — New use or function — Composition of matter (§51.555)

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte ROLAND BARTH

Appeal No. 1998-0982  
Application No. 08/399,715<sup>1</sup>

HEARD: November 3, 1999

Before McCANDLISH, Senior Administrative Patent Judge,  
FRANKFORT, and McQUADE, Administrative Patent Judges.

McCANDLISH, Senior Administrative Patent Judge.

DECISION ON APPEAL

AND

REMAND TO THE EXAMINER

<sup>1</sup> Application for patent filed March 3, 1995.

EXHIBIT

8

Appeal No. 1998-0982  
Application No. 08/399,715

Page 2

This is a decision on an appeal from the examiner's final rejection of claims 1 through 20.<sup>2</sup> No other claims are pending in the application.

Appellant's invention relates to "an arrangement for the relative adjustment of the rotation angle of a control shaft [2] with respect to a driving wheel [4], particularly for an internal combustion engine" (specification, page 1). An element (10) having one set of teeth engaging teeth on the driving wheel (4) and another set of teeth engaging teeth on a part (8) fixed to the control shaft (2) is axially displaceable to angularly adjust the driving wheel with respect to the control shaft. In the illustrated embodiment, the control shaft has a flange (11) disposed on one side of the driving wheel to act as a stop for limiting axial movement of the driving wheel in one direction. On the other side of the driving wheel there is a stop ring (12), a prestressed diaphragm spring (15) and a wear ring (16). The wear ring seats against a side face of the driving wheel, and the diaphragm spring is confined between the stop ring and the wear

---

<sup>2</sup> Claim 1 has been amended subsequent to the final rejection.

Appeal No. 1998-0982  
Application No. 08/399,715

Page 3

ring. With this arrangement, the diaphragm spring exerts a biasing force to establish engagement between the driving wheel and the stop flange (11) on the control shaft.

According to claim 1, the only independent claim on appeal, the diaphragm spring has "a characteristic curve whose shape is relatively negative and substantially constant along a maximal movement path of the predetermined operating range."

A copy of the appealed claims is appended to appellant's brief.

The following reference is relied upon by the examiner as evidence of obviousness in support of her rejection under 35 U.S.C. § 103:

German Patent DE 42 33 250 Jan. 20, 1994  
Barth et al. (Barth)<sup>3</sup>

Claims 1 through 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Barth. The examiner concedes that Barth lacks a disclosure of the claimed negative spring characteristic. She nevertheless concludes:

It would have been obvious to one of ordinary skill in the art, as determined through routine

---

<sup>3</sup> Translation attached.

Appeal No. 1998-0982  
Application No. 08/399,715

Page 4

experimentation and optimization, to provide a spring having the characteristics which are claimed because since it is well known that one of skill in the art would routinely experiment to choose a spring which would best allow for the characteristics which are required of the shaft.

To the extent that the language in appealed claim 1 is understandable, we cannot sustain the standing § 103 rejection. Admittedly, there are cases which have held that "optimization" may not in itself patentably distinguish the claimed subject matter over the prior art. However, in all of the authorities known to us, the optimization relates to a range or a variable. See, for example, In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980) (The discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art and, hence, obvious.).

In the case at bar, appellant's claimed diaphragm spring is required to be structurally different from Barth's diaphragm spring in order to provide the negative slope characteristic. Thus, in the present case, patentability of appellant's claimed invention is predicated on a difference in structure, and not on a change in a variable. The rule in Boesch therefore is not applicable to the present case, especially in view of the fact

Appeal No. 1998-0982  
Application No. 08/399,715

Page 5

that the examiner has not cited any authority for extending the Boesch principle concerning changes in a variable to a situation in which an apparatus has been structurally modified to achieve a certain result.

The examiner's decision rejecting appealed claims 1 through 20 is therefore reversed.

This application is herewith remanded to the examiner to review the claimed subject matter for compliance (a) with the description requirement in the first paragraph of 35 U.S.C. § 112 and (b) with the second paragraph of 35 U.S.C. § 112.

With regard to the first paragraph of § 112, certain limitations in claim 1 appear to lack descriptive support in the original specification, the original claims or the original drawings. In particular, appellant's application as filed lacks descriptive support for the recitation in claim 1 that the axial stops (in the plural) are "frictionally engageable with the driving wheel." Of the two axial stops described in the original specification and shown in the original drawings, namely the control shaft flange 11 and the stop ring 12, only

Appeal No. 1998-0982  
Application No. 08/399,715

Page 6

the control shaft flange is engageable<sup>4</sup> with the driving wheel. Furthermore, appellant's application as filed appears to lack descriptive support for the recitation in claim 1 that diaphragm spring has an operating range "to move at least one of the axial stops into frictional engagement with the driving wheel, . . ."

With regard to the second paragraph of § 112, the examiner's attention is directed to the recitation in claim 1 that the shape of spring's characteristic curve is "relatively negative and substantially constant along a maximal movement path of the predetermined operating range" (emphasis added). It is unclear what is meant by the recitation that the movement path (which we understand to be the spring's deflection path) is "maximal." Furthermore, the word "substantially" is a term of degree. Appellant's specification, however, appears to lack any guidelines or standards for measuring that degree as required in Seattle Box Co. v. Industrial Crating & Packing Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984).

---

<sup>4</sup> According to its applicable dictionary definition (see Webster's Third New International Dictionary (G. & C. Merriam Company, 1971)), the word "engage" means to "come into contact with."

Appeal No. 1998-0982  
Application No. 08/399,715

Page 7

REVERSED AND REMANDED

HARRISON E. McCANDLISH )  
Senior Administrative Patent Judge )  
)  
)  
)  
)  
)  
)  
CHARLES E. FRANKFORT ) BOARD OF PATENT  
Administrative Patent Judge ) APPEALS  
) AND  
) INTERFERENCES  
)  
)  
JOHN P. McQUADE )  
Administrative Patent Judge )

HEM/jlb

Appeal No. 1998-0982  
Application No. 08/399,715

Page 8

EVENSON, McKEOWN, EDWARDS & LENAHAN  
1200 G STREET NW, SUITE 700  
WASHINGTON, DC 20005